

this matter the example of Egypt should be constantly borne in mind, both as showing the difficulties and loss incurred when survey is allowed to lag behind the necessities of land development and taxation, and also as an example of the methods upon which the cadastre of such a piece of country should proceed. The map before us is produced in the excellent style that its origin would lead us to expect, and the thanks of all geographers are due to its compilers and publishers.

E. H. H.

The Anatomy of the Common Squid, Loligo Pealii, Lesueur. By L. W. Williams. Pp. xv+92. (Leyden: late E. J. Brill, n.d.) Price 10s.

THIS work, published under the patronage of the American Museum of Natural History, but printed in Holland without date, is a very complete and well-illustrated description of the anatomy of one of the commonest Cephalopods. As such it should meet with a warm welcome from all serious students of the mollusca. We believe the squid is a type not usually dissected by zoological students in this country, but for the sake of comparison, at any rate, the work should find a place in the zoological laboratory.

We do not expect very much in the way of novelty in a memoir of this kind, but the author is to be congratulated on the important discovery of a pair of giant nerve-cells situated in the pedal ganglion, and each giving off a giant fibre. The giant fibres pass backwards to the centre of the visceral ganglion, where they cross one another, forming a "chiasma"; each fibre then passes on through the viscero-stellate connective to the stellate ganglion of the side opposite its origin, where it divides into a number of branches, one of which enters each of the larger nerves given off from that ganglion. There appears to be no doubt about the facts of the case, which are sufficiently remarkable, but the term "chiasma" hardly seems suitable for the simple crossing of a single pair of fibres. According to the author, this is the first time such fibres have been described in any mollusc, though similar structures are, of course, widely distributed throughout the animal kingdom. We may mention that in the first text-figure we have what seems to be a variation of Lankester's well-known schematic mollusc which does not appear to us to be any improvement on the original.

The Siege and Conquest of the North Pole. By George Bryce. Pp. xvi+334. (London: Gibbings and Co., Ltd., 1910.) Price 7s. 6d.

As a record of a group of Arctic journeys which had the object of attaining the North Pole, this volume has a real value. It gives, usually in the explorers' own words, the most stirring stories of the Far North, many of which are now difficult to procure in the original form. The record only deals with the last hundred years, the three centuries of earlier efforts being dismissed in a brief introduction. The expeditions chronicled are those of Parry in 1827, Kane in 1853-5, Hayes in 1860-1, the German expedition of 1869-70, the *Polaris* expedition of 1871-3, the Austro-Hungarian expedition of 1872-4, the British expedition of 1875-6, the voyage of the *Jeannette* in 1879-81, Greely's in 1881-4, Nansen's in 1893-6, Sverdrup's in 1898-1902, the Duke of the Abruzzi's in 1899-1900, Peary's from 1886 to 1909, and lastly, Cook's in 1907-9. There were, of course, several other expeditions in the period covered, some, such as Andr  e's, avowedly aimed at the pole; others, like the Jackson-Harmsworth, the Ziegler, and the Wellman expeditions, in which the attainment of the pole was at least as much an object of ambition as was the case with Nansen, and much more so than with Greely or Sverdrup. We are, indeed, inclined to

suspect that the hope of gaining the fame of first reaching the pole has animated a good many explorers whose ostensible ideals were more modest.

The author's comments and criticisms are few, but usually sound; and we are the more surprised to find that in the light of the adverse opinion of the University of Copenhagen he was able to say "it is impossible at present to pronounce a final judgment" on the story of Cook's journey in 1908. The summing up is strongly in favour of Dr. Cook's claim, and Mr. Bryce does not seem to be staggered by the coincidence of a group of highly improbable statements. He seriously reproduces, without comment or criticism, the absurd assertion that, after finding a latitude of 89° 59' 45", the explorer advanced "a distance equal to the 15". With the exception of the last chapter, however, we can commend the book unreservedly as giving in brief compass a graphic account of many of the greatest trials of human endurance. The sketch-maps suffer from the common fault of being over-reduced, but they help the reader to follow the narratives all the same.

The author does not point out, but the book itself bears abundant testimony to the fact, that the greatest results have been gained since the naval or military organisation of polar expeditions has been abandoned, and the personal ambition or scientific zeal of the leader has become the driving power of a small, well-equipped party, strong in the realisation of the lessons of past failure.

Les   tats physiques de la Mati  re. By Prof. Ch. Maurain. Pp. 327. (Paris: F. Alcan, 1910.) Price 3.50 francs.

THIS book is, as the title suggests, an exposition of the properties of matter in its various states. The author confesses, however, in his introduction, that he is principally concerned with the properties of crystals, the different states of solid bodies, liquid crystals and colloids. Thus we find only twenty-three pages devoted to the study of gases, and rather more than fifty to that of liquids. Prof. Maurain has found it convenient to preserve the old divisions of solid, liquid, and gas, but he points out that the distinctions are as regards degree only, and that no properties are peculiar to a particular state.

The treatment is practically devoid of mathematics. The contents of the book are mainly a collection of experimental facts, particularly those which have been brought to light by the use of the microscope and ultramicroscope. The former as applied to crystals, and the latter to emulsions and colloids, have recently widely extended the knowledge of these states of matter.

There are, in all, eleven chapters. The first is devoted to gases and gaseous ions. Reference is made to the kinetic theory, and estimates are given of the sizes and masses of the molecules. The second chapter deals with the properties of liquids. Much attention is paid to the question of the thickness of liquid films and its bearing on the molecular dimensions, and there is also included a discussion of the various methods of estimating the molecular weights of substances. In the next three chapters the properties of solid bodies are fully treated. The various systems of crystals are defined, and examples are given of their directed properties relating to thermal and electrical conductivities, elasticity, magnetism, and optics. The crystalline structure of solid bodies as seen through the microscope is described, and is applied to explain the various properties of metals. Chapter vi. deals mainly with the production of double refraction in isotropic bodies by external means, such as mechanical pressure and electric and magnetic fields. Liquid crystals form the subject of chapter vii. The special properties

of thin solid films are next treated, including Quincke's experiments on the range of molecular action. Chapter ix. is devoted to the behaviour of homogeneous mixtures, both liquid and solid, and chapter x. to heterogeneous mixtures, such as alloys and mixtures of salts. The concluding chapter concerns colloidal solutions, their preparation, structure, &c.

The book, as a whole, is very good. It contains a large fund of information, clearly put and in logical order. It is therefore both readable and instructive.

Aids to Microscopic Diagnosis (Bacterial and Parasitic Diseases). By Capt. E. Blake Knox. Pp. viii+156. (London: Baillière, Tindall and Cox, 1909.) Price 2s. 6d. net.

THIS little book is a *résumé* of clinical methods as applied in the diagnosis of bacterial and parasitic infections of man, and contains a large amount of useful matter in a small space. It is not meant to take the place of the ordinary text-books on these subjects, but to be used for revision purposes, and will be found handy by travellers who are unable to burden themselves with many books. Protozoal organisms, such as malaria, trypanosomes, and spirochaetes, filaria, pathogenic bacteria, and the diseases they cause, pathological secretions, the opsonic index, and vaccine therapy are all dealt with, together with the methods required to demonstrate and isolate the causative organisms.

We have noticed a few slips and omissions, e.g. the *Streptococcus pyogenes* is spoken of as the *S. pyogenes aureus*; no mention is made of the fact that the *Staphylococcus pyogenes* group liquefies gelatin, while the *Staph. cereus* group does not; it is questionable if the tubercle bacillus can ever be detected in the blood; the term "subtertian," now commonly applied to the malignant form of malaria, is not mentioned; toxin and not dead culture is used for the preparation of diphtheria antitoxin; prophylactic vaccination in cholera is given under the heading "serum therapy," &c. Within the limitations stated by the author, we think a useful purpose will be served by this little book.

R. T. HEWLETT.

Lift-Luck on Southern Roads. By Tickner Edwardes. Pp. xv+301. (London: Methuen and Co., 1910.) Price 6s.

HERE is a pleasantly written description of a journey, of some two hundred miles, through five southern English counties, on an unusual plan. Mr. Edwardes says, "My plan consisted in waiting by the roadside or strolling gently onward, until something on wheels, it mattered not what, overtook me . . . by dint of laying under use the whole gamut of country perambulation, at length, after many days of travel, I found myself at my journey's end." Having only a camera and a pack, the author was able to go into every byway he fancied and investigate any subject which presented itself. His account of his wanderings and his illustrations will delight all lovers of the country.

Praeunciae Bahamensis. II., Contributions to a Flora of the Bahamian Archipelago. By C. F. Millspaugh. (Chicago: Field Museum of Natural History, 1909.)

THIS is the second fascicle of a contribution to a flora of the Bahamian Archipelago, issued by the Field Museum of Natural History. It contains observations on old species, the establishment of the new genus *Euphorbiodendron*, and the description of eleven novelties distributed among the genera *Dondia*, *Portulaca*, *Chamaesyce*, *Croton*, *Centaurium*, *Heliotropium*, *Varronia*, *Catesbæa*, and *Callicarpa*, collected in fifteen different islands of the group.

LETTERS TO THE EDITOR.

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Halley's Comet and Magnetic and Electrical Phenomena.

HALLEY'S comet has been a source of interest to magneticians as well as to astronomers. The question was: Would the proximity of the comet's tail occasion a magnetic storm or would it not? If the tail consists of electrified particles, and if it were to envelop the earth, then a magnetic storm appeared a reasonable concomitant. It was thus with some expectancy that I consulted the magnetic curves recorded at Kew on May 19. The conclusion that will be drawn from these and similar records will, I suspect, depend somewhat on the temperament of the inquirer. A large magnetic storm unquestionably there was not, but there was disturbance.

The position may perhaps be best explained by reference to the international lists that are published as to the magnetic character of individual days. Days are classed as "0," "1," or "2," according as they are magnetically quiet, moderately disturbed, or highly disturbed. Taking the three years 1906, 1907, and 1908, the Greenwich and Kew lists, while differing in details, agreed in putting 39 per cent. of all the days in class "0," 58½ per cent. in class "1," and 2½ per cent. in class "2." No day practically is absolutely quiet, and a good many days are so near the line of demarcation of classes "0" and "1" that it is a good deal a matter of chance to which they are assigned. Again, there are an appreciable number of days so near the common margin of classes "1" and "2" that they may well be assigned to either. Thus while the Kew and Greenwich lists for the three years mentioned each assigned twenty-nine days to class "2," only nineteen days were common to both lists. If, then, a day is chosen by haphazard, it is most likely to be of disturbance class "1," while the odds against its being of class "2" are not so great that if it should prove to be of that class one is compelled to accept the coincidence as necessarily more than accidental.

In the present instance what was *a priori* the most probable event has happened; May 19 was undoubtedly of disturbance class "1." So far, indeed, as the declination curve was concerned, the choice between classes "0" and "1" was not very clear, but the horizontal force curve—while very far from being *highly* disturbed—was unquestionably up to the average class "1" level. The most rapid horizontal force changes occurred between 10 a.m. and noon, the range of the largest oscillation being about 50·7 (0·0005 C.G.S.). There were also changes of nearly the same size between 0 and 2 a.m., and again between 3 and 5 p.m. The largest irregular declination movements occurred between 0 and 3 a.m., the range being about 9'. Later in the day there were some oscillatory declination movements synchronous with those shown in the horizontal force curve, but their amplitude was only 2' or 3'.

As a rule, days of class "0" and days of class "1" disturbance occur in groups. The present occasion follows the general rule. From May 13 to 20 no day, except possibly May 16, was of class "0," May 13 being the most disturbed. There were horizontal force changes on the afternoons of May 17 and 18 similar in size to those on May 19. The afternoon of May 20 was also disturbed, though less so. The disturbances on May 18 and 19 were similar in magnitude to those which in 1902-3 accompanied what Prof. Birkeland termed "polar elementary" magnetic storms in the Arctic, and if Prof. Birkeland expected no more than a "polar elementary" storm from the passage of Halley's comet, then I have little doubt that the special observations he has been making in the Arctic will have supplied him with what he was looking for.

As it was conceivable that the intrusion of a comet's tail into the earth's atmosphere might exert a visible effect on the electric potential, I have also examined the Kew electrograms. The electrograms from May 19 to May 20